

## **BOX-ASSEMBLY DEVICE**

### **BACKGROUND OF THE INVENTION**

#### **FIELD OF THE INVENTION**

**[0001]** The present invention relates, in general, to a device for assembling boxes and, more particularly, to a box-assembly device which is easily and simply attached to a corner of a box so as to easily and simply assemble the box into a desired shape.

#### **RELATED BACKGROUND ART**

**[0002]** Generally, a combined storage and decoration box is fabricated by assembling a plurality of panels into a single body having a rectangular cross-sectional shape, and is used as a box for storing books, flowerpots, and other articles therein.

**[0003]** FIG. 1 is an exploded perspective view of a conventional box.

**[0004]** As shown in the drawing, the conventional box is fabricated with upper and lower panels 1 and 2, two side panels 3 and 4 mounted to both side edges of the upper and lower panels 1 and 2, and a rear panel 5 mounted to the rear edges of the upper, lower and two side panels 1, 2, 3 and 4.

**[0005]** To assemble the panels into the box having the above structure, it is necessary to drill through the panels after the panels have been cut to size. Thereafter, the panels are , arranged to form a shape with a rectangular cross-section, prior to being assembled into a single body by the panels being screwed to one another.

**[0006]** To align the rear panel 5, fitting grooves 6 configured to mate with the rear panel are formed at desired positions of the rear parts of the upper, lower and side panels 1, 2, 3 and 4.

**[0007]** However, assembly of the panels into the conventional box requires a drilling process, a screwing process, and an alignment process to align the fitting grooves 6 with the rear panel 5.

**[0008]** Therefore, manufacture and assembly of conventional box-assembly is a complex process.

## SUMMARY OF THE INVENTION

**[0009]** The present invention provides a box-assembly device which is easily and simply attached to a corner of a box so as to assemble the box into a desired shape, while increasing work efficiency. The box assembly device includes a first locking part having two faces forming a first opening. The first opening is configured to receive an edge of a panel at a corner of a box to be constructed. A second locking part is integrated with an end of the first locking part into a single body. The second locking part has two faces forming a second opening. The second opening is configured to receive an edge of another panel at the corner of the box. The first and second openings are oriented in the same direction

**[0010]** In the box-assembly device, the first and second locking parts may be integrated with each other at a right angle into a single body, or the first and second locking parts may be integrated with each other at an obtuse angle into a single body. Each of the first and second locking parts are preferably provided with a plurality of compression ridges on inner surfaces thereof so as to increase a locking force thereof on the panels. A locking hole may be formed on an outer surface of at least one of the first and second locking parts. Similarly, a locking projection may be formed on an outer surface of at least one of the first and second locking parts..

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0011]** The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

**[0012]** FIG. 1 is a view of a conventional box;

**[0013]** FIG. 2 is a perspective view of a box-assembly device, according to the present invention;

**[0014]** FIG. 3 is a perspective view of a box, which is assembled into a desired shape by the use of a plurality of box-assembly devices of the present invention;

**[0015]** FIG. 4 is a view of a plurality of boxes, which are assembled into a multi-story box arrangement by the use of a plurality of box-assembly devices of the present invention;

**[0016]** FIG. 5 is an enlarged view of portion A of FIG. 4;

**[0017]** FIG. 6 is an enlarged view of portion B of FIG. 4;

**[0018]** FIG. 7 is an enlarged view of portion C of FIG. 4;

**[0019]** FIG. 8 is an enlarged view of portion D of FIG. 4; and

[0020] FIG. 9 is a view showing a box-assembly device, according to another embodiment of the present invention.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0021] Preferred embodiments of the present invention will be described in detail herein below, with reference to the accompanying drawings.

[0022] FIG. 2 is a perspective view of a box-assembly device according to an embodiment of the present invention. In the drawing, the box-assembly device is designated by the reference numeral 100. As shown in the drawing, a box-assembly device 100 comprises a first locking part 10 and a second locking part 20 which are respectively fitted over edges of two panels P placed at a corner of a box. That is, the first locking part 10 is open at two faces thereof, thus being fitted over an edge of a panel P around the corner of the box.

[0023] A second locking part 20 having the same structure as that of the first locking part 10, and is integrated with an end of the first locking part 10 into a single body. The second locking part 20 is open at two faces thereof, thus being fitted over an edge of another panel P around the corner of the box.

[0024] In the box-assembly device 100, the first and second locking parts 10 and 20 are open in the same direction, so that the locking parts 10 and 20 are respectively fitted over the edges of the panels P in the same direction, thus assembling the panels P into the box having the rectangular cross-sectional shape.

[0025] In the present invention, the first and second locking parts 10 and 20 are preferably integrated with each other at a right angle into a single body. In addition, each of the first and second locking parts 10 and 20 is preferably provided with a plurality of compression ridges 30 on inner surfaces thereof so as to increase a locking force thereof on the panels P.

[0026] In addition, a locking projection 50 and a locking hole 40 are formed on the outer surfaces of the first and second locking parts 20 and 10, respectively.

[0027] FIG. 3 is a perspective view of a box, which is assembled into a desired shape by the use of a plurality of box-assembly devices of the present invention.

[0028] As shown in the drawing, it is possible to produce a rectangular box, which is open at the front and back thereof, by assembling the four panels P into a single body by fitting the box-assembly devices 100 at the front and back of the box.

**[0029]** FIG. 4 is a view of a plurality of boxes, which are assembled into a multi-story box arrangement by the use of a plurality of box-assembly devices of the present invention. As shown in the drawing, it is possible to assemble a plurality of rectangular boxes into the multi-story box arrangement by the use of a plurality of box-assembly devices 100, after assembling each of multiple rectangular boxes. The structures of the multistory box arrangement will be described in detail, based on respective portions A, B, C, and D of the box arrangement.

**[0030]** FIG. 5 is an enlarged view of the portion A of FIG. 4. The box-assembly device of the drawing, which is used at an outermost corner of the bottom of the multistory box arrangement, does not require the locking hole 40 or the locking projection 50.

**[0031]** FIG. 6 is an enlarged view of portion B of FIG. 4, in which two box-assembly devices 100 are used at a junction between two facing corners of two boxes. One of the two box-assembly devices 100 has the locking hole 40, while the other device 100 has the locking projection 50, which is configured to mate with the corresponding locking hole 40.

**[0032]** FIG. 7 is an enlarged view of portion C of FIG. 4, in which four box-assembly devices 100 are used at a junction between four facing corners of four boxes. Two of the four box-assembly devices 100 each have the locking holes 40 on the outer surfaces thereof, while the other two box-assembly devices 100 each have the locking projections 50 on the outer surfaces thereof.

**[0033]** FIG. 8 is an enlarged view of portion D of FIG. 4, in which four box-assembly devices 100 are used at a junction between four facing corners of four boxes. Each of the four box-assembly devices 100 has one locking hole 40 and one locking projection 50 on the outer surfaces thereof.

**[0034]** When the boxes having the box-assembly devices are arranged in such a multi-story box arrangement, a gap may be formed between the facing boxes, due to the thickness of the box-assembly devices of FIG. 2. In such a case, it is preferred to remove the gaps by inserting a finishing member 60 into each of the gaps, so as to obtain a good appearance for the box arrangement.

**[0035]** FIG. 9 is a view showing a box-assembly device according to another embodiment of the present invention, in which the first and second locking parts 10 and 20 are integrated with each other at an obtuse angle into a single body. The box-assembly device of this embodiment is used to construct boxes of a hexagonal shape. However, it should be understood that the box-assembly device of the present invention may be designed

to construct boxes of polygonal shapes, such as a pentagonal shape, without affecting the function of the present invention.

**[0036]** In this embodiment, the compression ridges, the locking hole, and the locking projection are formed on the box-assembly device 100, in the same manner as that described for the embodiment of FIG. 2, and further explanation of them is thus not deemed necessary.

**[0037]** The operational effect of the box-assembly device having the above-described structure will be described herein below. When a plurality of panels P are assembled into a box by fitting a box-assembly device 100 over the edges of two panels at each corner of the box, the panels P are strongly held by the device 100, due to the compression ridges 30 formed on the inner surfaces of the device 100. To assemble the boxes into a desired multi-story box arrangement after the boxes are each assembled into a single body by use of the box-assembly devices of FIG. 2, the box-assembly devices 100 of each constructed box are fastened to each other by inserting the locking projections 50 into corresponding locking holes 40 of a corresponding box, respectively. Gaps, formed between the boxes by the box-assembly devices 100, are removed by using of the finishing members 60.

**[0038]** The box-assembly devices are used for assembling a plurality of boxes into a multi-story box arrangement having partitioned spaces. These partitioned spaces may be used to store books, flowerpots, dolls, and other articles for storage as well as for interior decoration effect.

**[0039]** As described above, the present invention provides a box-assembly device, which is simply attached to a corner of a box so as to assemble the box into a desired shape, thus increasing work efficiency and improving productivity while producing the box.

**[0040]** In addition, the box-assembly device is used for assembling a plurality of boxes into a desired box arrangement with partitioned spaces, thus effectively storing articles in the partitioned spaces.